decorating trends, and Aubrey Beardsley illustrations (Ch. 2); Darwin's highly mediated methods of producing the images in his books (an alteration of an image of a wood engraving of a photograph) and the implications of these aesthetic choices, in Sabine Flach's hands, for his theory of facial expression and body language (Ch. 6); and Jan Söffner's suggestion that the impulse to jump away from a snake shares a significant conceptual apparatus with viewers' fascination with the play between image and text in René Magritte's *Ceci n'est pas une pipe* (Ch. 7).

As this overview suggests, the collection is trained more narrowly on *visual* aesthetics than its title might suggest. That focus could have been somewhat more explicitly acknowledged, if not embraced, and the connections between evolutionary theory and image theory brought further into focus. Within its own terms, the collection's focus on intersections between evolutionary and aesthetic theory does have one tradeoff: it occasionally leaves the implications of those intersections less fully resolved. That may be a risk of calling attention to historical convergences and attracting scholars to map them more fully. Sometimes it feels more like a discipline-wide uncertainty about the framework within which to bring evolutionary and aesthetic theory together. For example, the volume's fascinating chapter on animal mimicry and Surrealist art states that certain surrealists "use mimicry in a similar way as to how it works in evolution" (p. 140). But does that "similarity" mean that artists are deliberately engaging evolutionary ideas about mimicry in aesthetic form (as is implied elsewhere in the chapter)? Or does it mean that evolutionary theorists and artists happen to be interested in the same issues (that there is a "correspondence," as Flach puts it elsewhere)? Would that in turn mean that the dynamics of mimicry are inherently attractive to human aesthetic perception (both artist's and viewer's); is this attraction an evolved cultural trait? If so, would the relation between the dynamics of mimicry and their conversion into human art model in miniature the way that evolution and aesthetics more broadly intersect? Insofar as the point of the book is to tackle those intersections, these critical questions might be restated by saying that *Darwin and Theories of Aesthetics and Cultural History* succeeds in raising issues with which its readers will want to continue grappling.

Dana Carluccio

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Robert Halleux; Geneviève Xhayet; Pascal Pirot; Rik Raedschelders; Jan Vandersmissen.
Tant qu'il y aura des chercheurs: Science et politique en Belgique de 1772 à 2015. 340 pp., bibl. Liège: Éditions Luc Pire, 2015. €24 (paper).

In 2014, the Belgian government unexpectedly cut back federal funding of programs for scientific research, generating concern about the financing and international visibility of Belgian science. *Tant qu'il y aura des chercheurs* appeared against the backdrop of these concerns. It is an engaged book: a warning against a further fragmentation of the country's science policy and a call for more collaboration and financial means—a message the former head of these federal funding programs, Philippe Mettens, endorses in his preface to the volume. By showing the historical intertwinement of Belgian politics and scientific research, the authors highlight the necessity of democratic debate about science as a matter that concerns all Belgian citizens.

The book also has international scholarly ambitions. It presents the history of Belgian science policy as a contribution to a broader comparative history of science policy in Europe. It is a well-balanced synthesis that highlights the particularity of Belgium's science policy by tracing its relationship to local processes of (de)industrialization, ideological tensions, and linguistic struggles between the country's Dutch- and French-speaking communities. Occasional comparisons with other countries and sketches of international trends allow readers to assess the significance of this particularity. The book is the result of a col-

laboration between several members of the Centre d'Histoire des Sciences et Techniques at the University of Liège. Robert Halleux, the center's president, coordinated the project. In 1998 and 2001, the center's members took the lead in a similar synthetic effort: a two-volume history of the sciences in Belgium (Dexia, 1998, 2001). The current volume is much more specific. Its focus is on "science policy," which is defined broadly as a politics to advance science as a whole and to employ the gains from the sciences to realize the economic, social, and cultural goals of the nation.

Although the volume covers more than two centuries, the emphasis is on the post–World War II period, to which eight of the twelve chapters are devoted. The first three chapters trace the emergence of science policy back to the eighteenth-century ideal of science being "useful" to society—an ideal that underpinned the investments of successive monarchs and governments in academies, universities, and hospitals to augment the nation's prestige. These chapters draw on well-known research in the history of universities but also integrate recent research by Pascal Pirot on the role of the Belgian monarchy in the development of the (colonial) sciences (e.g., tropical medicine and cartography). Unfortunately, the book devotes limited space to nineteenth-century developments, which means that interesting contemporary debates on the desirability of state intervention in the sciences and the best model for such intervention—centralized or decentralized—are not discussed.

Chapters 4–7 cover the period from 1927 to 1980. After World War I, the rise of new industries required new forms of scientific research. King Albert I's famous speech at the centenary of the Cockerill factories in Seraing, in 1927, called for a closer relationship between science and industry, including more private capital for scientific research. New philanthropic trusts and public funds, of which the Fonds National de la Recherche Scientifique (FNRS) was the most important, testified to the alliance between monarchy, industry, and science in the interwar years. An "American" model of apolitical and independent scientific bodies was introduced in Belgium, as the work of Kenneth Bertrams has shown. After World War II, the national government's ambition—in a context of emerging Big Science—to steer scientific research (e.g., nuclear and medical research) clashed with this older model, in which individual researchers' rights to develop their own research program occupied center stage. The authors show convincingly how these tensions pervaded political debates between Christian Democrats and Liberals and caused conflicts over competence between the FNRS and the newly founded governmental Service de Programmation de la Politique Scientifique (SPPS).

The final five chapters, which cover the science policy of Belgium's regions after 1980, do not bring the same depth to their analyses. This is partly due to the limited available research. As the authors rightfully indicate, the chapters form a first comparative history of the different science policies in Brussels, Flanders, and Wallonia that were developed in parallel with the state reforms since the 1980s. These policies differed considerably. While Flanders aimed at a more autonomous research program in line with the development of the region's own cultural identity, Wallonia's efforts centered on the modernization of its industry through technological innovation. At the federal level, the 1993 reforms created—paradoxically—a strong science policy, which enabled, for example, Belgium's successful participation in European space travel. The chapters further enumerate the different administrative services and programs for interdisciplinary and interuniversity collaboration in each of these regions. Given the complexity of these services and programs, an index and list of abbreviations would have been a welcome addition to the book.

Finally, as in many syntheses, the book contains several blind spots that are related to the limited availability of primary research. It shows the need—and offers stepping stones—for more research into late twentieth-century political views of science. In general, the medical field is scarcely discussed, even though medical research took up a considerable amount of the available funding. The book might also have benefited from including the voices of the scientists themselves more often. Their experiences in managing the machinery of Belgium's funding agencies and their attempts to influence science policy might have contributed to the book's main ambition of bringing out the particularity of Belgian science policy within a European framework.

Joris Vandendriessche

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Philip Ball. *Invisible: The Dangerous Allure of the Unseen.* xii + 320 pp., illus., bibl., index. Chicago/London: University of Chicago Press, 2015. $27.50 (cloth).

Invisibility is one of the great themes of epistemology and anthropology. However, its very negativity makes attention complicated. Books on visual culture abound, but there is little on that which escapes vision, possibly because it is too large to be seen. Invisibility raises questions touching on disappearance, blindness, death, nothingness, imperfection, loss, and limitation. No wonder, then, that it has informed literature and the arts to a great extent. Philip Ball, a highly productive freelance writer who works at the intersections between culture, perception, and science/technology, dared to tackle the topic. As a trained chemist and physicist, he was already on the path to the invisible when he published *Stories of the Invisible: A Guided Tour of Molecules* (Oxford, 2001). The title of his new book alludes to the fascination and threat of the invisible, and this is what is deftly explored in Ball's study.

The topic is highly interdisciplinary, and the author meets the challenge with great dexterity and knowledge. The cultural appeal of invisibility has produced literary and artistic works, some of them of very high standing, others of a popular or even trivial nature. This (non)phenomenon thus comprises Hamlet's ghost and horripilation, sensational show business and public exhibitions, disappearing women and invisible skyscrapers. The basic tension, as Ball sees it, derives from mythical models—such as the Ring of Gyges—and their realization in contemporary technology. Magic and technology manifest astounding parallels, or, as Ball says about Susumi Tachi, an electronic engineer who has been making people invisible: "The technology is different; the dream is the same" (p. 231).

Ball writes about mythical antecedents and medieval fantasies but devotes more space to Renaissance tricks and techniques, theatrical devices, and optical illusions (Athanasius Kircher, Giambattista della Porta). Invisibility remains a concept, if a dangerous and negative one, in philosophy and physics and can even be found in Adam Smith's Invisible Hand. Newton and Leibniz had to make do with paradoxical elements such as monads, "which act like purposeful agencies, making the world a shadow play of the mind" (p. 31). Sympathy, emanation, the Ether—all of these agencies are hard to grasp and yet form the basis of many a system. Are today's strings and quarks any better? Hocus-pocus charlatans and stage magicians kept the flame alive, most of their performances including a disappearance or an appearance out of nowhere. With mesmerism and spiritualism in the nineteenth century invisible forces returned with a vengeance and at times are allied with modern science. Prophets of the invisible may very well be renowned professors of rational and empirical science, such as William Crooke or Oliver Lodge. Even Thomas Edison invested in thinking about machines that would connect us with Kingdom Come. Arthur Conan Doyle was misled about fairy photographs, but this did not deter him from defending the invisible world. The major literary work inspired explicitly by invisibility is H. G. Wells's *The Invisible Man* (1897). It's not his best novel, in particular because he reduces the invisible protagonist: Wells focused at first on the terrorist of the invisible but then turned him into just an eccentric criminal. Ball also discusses the technological problems of becoming invisible given that the retina can never be completely transparent. Wells's technological bent distracts from the social forces that make people invisible. Ralph Ellison's *Invisible Man* is given as a famous example, but Ball could have added Chesterton's Father Brown story "The Invisible Man," in which the most inconspicuous person is the murderer while the detectives are confused by technological gadgets—a clear spoof on Wells.

The last pages of *Invisible* are devoted to recent developments in the field of camouflage and invisibility. Optical tricks and so-called metamaterials gain an increasingly important role. However sophisticated we become, we continue to "interpret the science and technology through a mythical lens," as Ball notes